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UPSTATE MEDICAL UNIVERSITY

Eduardo Solessio, Ph.D., Upstate Medical University, Is Awarded Nearly $2M in NIH Funding for Vision Study

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Newswise — Eduardo C. Solessio, Ph.D., has been awarded $1,821,375 from the National Institutes of Health, National Eye Institute for a five-year study to establish how the time course of rod responses contribute to visual temporal contrast sensitivity in dim light. Rods are the visual receptor cells in the retina that are sensitive to dim light. Deficits in detecting small differences in contrast interfere with the ability to perform everyday visual tasks such as reading, driving, or face recognition. Solessio is assistant professor in the Department of Ophthalmology/Center for Vision Research at Upstate Medical University.

Solessio and his team are focusing on both the cellular and networking properties of rods and are examining visual properties common to mouse and human through a novel operant behavioral test that they developed for mice.

They are using this test in combination with standard electrophysiological tools on mice that have been genetically modified to manipulate the temporal responses of their rod photoreceptors.

“Of primary importance to vision in the normal and impaired neural retina is the temporal processing of the visual scene,” said Solessio. “By relating behavior to neural physiology in these transgenic mice, our study aims to determine how rods’ response to light restricts visual temporal processing in health and disease.”

Solessio and his team are investigating a mutation in the photopigment of rods that they hypothesize may

cause changes in temporal contrast sensitivity. This mutation is present in a form of retinitis pigmentosa, an inherited vision disorder that causes progressive degeneration of the retina.
Results of this study may be used to develop an early and practical visual function test that is diagnostic of certain forms of autosomal dominant retinitis pigmentosa.

Solessio's research will advance knowledge into the contributions of rod kinetics to visual temporal contrast sensitivity in normal and diseased retinas. His findings will also provide insight into the dynamic signaling interactions between rods and cones that determine the temporal, spatial and spectral sensitivities of vision in dim lights.

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